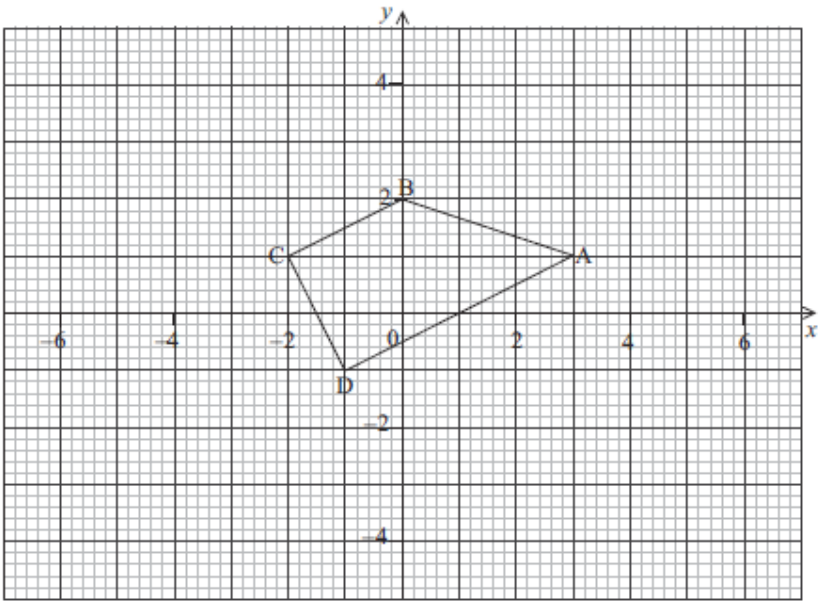
1) The vertices of quadrilateral $ABCD$ as shown in the diagram are $A(3,1)$, $B(0,2)$, $C(-2,1)$ and $D(-1,-1)$.



A) Calculate the gradient of line CD.

B) Show that line AD is perpendicular to line CD.

C) Find the equation of line CD. Give your answer in the form $ax+by=c$ where $a, b, c \in \mathbb{Z}$

Lines AB and CD intersect at point E. The equation of line AB is $x+3y=6$.

D) Find the coordinates of E.

E) Find the distance between A and D.

The distance between D and E is $\sqrt{20}$.

F) Find the area of triangle ADE.

1) A straight line, L_1, has equation $x + 4y + 34 = 0$.

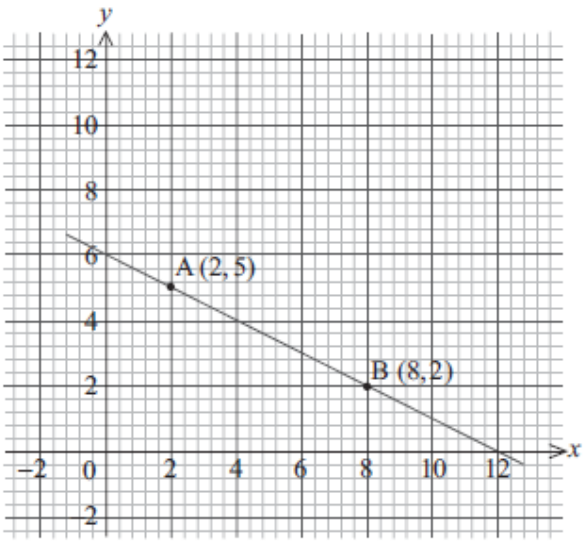
A) Find the gradient of L_1.

The equation of line L_2 is $y = mx$. L_2 is perpendicular to L_1.

B) Find the value of m.

C) Find the coordinates of the point of intersection of the lines L_1 and L_2.

2) A and B are points on a straight line as shown on the graph below.



A) Write down the y-intercept of the line AB.

B) Calculate the gradient of the line AB.

The acute angle between the line AB and the x-axis is θ.

C) Show θ on the diagram.

D) Calculate the size of θ.